SMOKING HABITS OF HUSBANDS OF NON SMOKING WOMEN WITH LUNG CANCER AND OF NON SMOKING CONTROL WOMEN

Group	Non-smokers	Ex-smokers	Cigarettes per day (current smokers) 1–10	11–20	21–30	31+	Total
Lung cancer	24	15	2	22	7	7	77
Controls	109	35	16	40	8	17	225
RR*	1·0	1·9	[illegible]		[illegible]		..

*Relative risk = ratio of risk of lung cancer among women whose husbands belong to a particular smoking category to that among women whose husbands are non-smokers. χ² (linear trend) = 6·7, p (two-tail) about 0·01.

The table increases the credibility of the hypothesis implicating passive smoking as a factor in lung cancer. Given the small size of the relative risk and the many potential sources of bias, no single study will be able to provide convincing evidence for or against this hypothesis, only the convergence of results from different studies in different populations will permit a reasonably sound conclusion. We consider the Athens study a step in this direction.

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GLASGOW COMA SCALE: TO SUM OR NOT TO SUM?

SIR,—The method for assessing patients with impaired consciousness that we described almost a decade ago[1] has been widely accepted, and in many centres the eye, verbal, and motor components are summed.[2] Totals up to 8 relate to patients in coma with no eye opening or verbal responses, reflecting changes in motor response, scores from 9 to 15 depend more upon eye opening and verbal responses. Janine Jagger and her colleagues (July 9, p 97) doubt if eye and verbal responses add predictive information. They studied the short-term outcome in head-injured patients assessed on admission only. Not surprisingly, they found the motor responses to be most informative; patients who, on admission, show eye opening and comprehensible verbal responses ought not to die. Death can be expected only amongst patients *already* in coma due to severe established brain damage. Such patients would have no eye opening and no comprehensible verbal responses so that their coma score would depend upon the motor response.

Changes in the eye and verbal responses, and thus higher overall scores, are useful in discriminating between patients with less severe impairment of consciousness. Although these patients would be expected to survive, this may be with differing degrees of disability. The Charlottesville group themselves found that increasing scores in the 9–15 range (reflecting improving eye and verbal performances) are associated with a doubling of the rate of good recovery in survivors of head injury.[3] Furthermore, correlations have been established across the whole range of the coma score with cerebral metabolic rate for oxygen,[4] evoked potential studies,[5] and biochemical indices of brain damage.[6]

Head-injured patients may change rapidly after admission, and the eye and verbal responses are useful in assessing improvement or deterioration to show whether a patient is in coma and how long he remains comatose. Scores obtained during the first few days after admission reveal much more about prognosis than do admission scores.

The analysis used by the Charlottesville group is not well suited to comparing the relative predictive power of different clinical features and can exaggerate minor differences. Moreover, they included information about pupil responses and about a haematoma which could not have been known at the time of admission. Yet they have previously demonstrated correlations between higher coma scores and decreasing frequency of abnormal pupil responses and CT scan abnormalities in moderately injured patients.[2] Because of this, the inclusion of these features may have masked the information provided by the eye and verbal responses. Their analysis should have been restricted to the three aspects of the coma scale. They would then have found[2] that knowledge of the eye and verbal responses in addition to the motor response, does convey extra information, whether the three responses are considered separately or summed.

Although we cannot accept the Charlottesville group's reservations about the value of the eye and verbal components there are limitations inherent in the summation of the three responses. This step assumes an equal weighting for the three responses. More importantly, the information conveyed by the coma score is less than that contained in the three responses separately.[2,7] This is because the same score may be made up in different ways. Indeed, in Glasgow patients under treatment are always described by the three separate responses and never by the total. The total score is merely a convenient method for summarising data, especially for a series of patients. Therefore, while we do not favour its use in day-to-day clinical practice, we find no reason to doubt that it will continue to be used widely in the analysis and reporting of a series of patients with head injuries or other forms of acute brain damage.

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CULTURED EPIDERMAL CELLS AND BURNS

SIR,—We read the article by Dr Hefton and colleagues (Aug 20, p 428) with interest because for some time we have been studying both human epidermal cell culture and methods for stimulating the re-epithelialisation of non-healing ulcers. Before those caring for burns patients rush out to buy an epidermal cell culture kit a note of caution should be sounded. It took many years before human epidermal cells could be cultivated regularly in vitro. The techniques require considerable skill and experience to have consistent success even with a feeder layer of mouse derived 3T3 cells: to grow cells from cadaver skin (how long after death we are not told) without a feeder layer is praiseworthy but not within the grasp of many other laboratories.

With the system used by Hefton et al, based on the studies of Eisinger et al,[8] there does not appear to be an increase in the number of epidermal cells. The total number of cells in culture after 25 days is less than the number of cells seeded at day 0 (see fig 2 in Eisinger et al). This would imply that the system as a whole has the disadvantage that an area of cadaver skin equal in area to the site to be covered would be required for grafting. On the other hand the 3T3 fibroblast system used by O'Connor et al[9] is capable of a considerable increase in the number of cells in vitro. Unless Hefton

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Letters to the Editor

PNEUMOCOCCAL PERITONITIS ASSOCIATED WITH AN IUCD

SIR,—A series of 116 patients at East Birmingham Hospital who had pneumococcal bacteraemia during the years 1974–82 included 5 cases of peritonitis—2 in patients with nephrotic syndrome (a well-known association) and three in women of previous good health who had been fitted with an intrauterine contraceptive device (IUCD).

Case 1.—A 32-year-old woman was admitted to hospital in October, 1978, after 4 days of abdominal pain and distension, with a temperature of 38·5°C and clinical signs of peritonitis. Rectal examination was normal. Abdominal X-rays showed many fluid levels with distended small-bowel loops. A correctly placed IUCD ("Gravigard") was also noted. This had been fitted 18 months previously. A chest X-ray was normal. The clinical diagnosis was invasive salmonellosis; she was given intravenous chloramphenicol and improved. No intestinal pathogens were isolated but blood culture yielded a pure growth of *Streptococcus pneumoniae*. On benzylpenicillin she continued to improve. After a transient fever 2 weeks after admission a chest X-ray was repeated, demonstrating right-lower-lobe consolidation. She recovered completely without further treatment. Her IUCD was removed in August, 1979, when it was described as "unremarkable".

Case 2.—A 46-year-old woman was admitted in March, 1981, after a 5 day history of continuous abdominal pain and watery diarrhoea. Her temperature was 38·2°C and she had clinical signs of peritonitis. Vaginal examination revealed a large tender uterus. Abdominal X-rays showed many fluid levels and a correctly placed IUCD (Lippes loop, fitted in October, 1975). A chest X-ray was normal. High vaginal swabs revealed pus cells and normal commensal flora. She was given gentamicin and metronidazole but did not improve. After 2 days, *Strep pneumoniae* was isolated from blood culture. Benzylpenicillin was given and thereafter she recovered quickly. The IUCD appeared normal when removed 12 days after admission.

Case 3.—A 46-year-old woman with mild mitral stenosis was admitted with a 7 day history of abdominal pain and diarrhoea. She was hypotensive with clinical signs of peritonitis. Laparotomy confirmed peritonitis but did not reveal its cause. However, *Strep pneumoniae* was later grown from both peritoneal fluid and blood. Despite antibiotic treatment acute renal failure and cardiac failure developed and she died 8 days after admission. Necropsy revealed a bicornuate uterus. In one horn there was a 'Dalkon' shield IUCD adjacent to a small infarcted fibroid. This IUCD, a radiolucent type, had been fitted at least 4 years previously. Although there was no microscopic evidence of endometritis, bilateral salpingitis was present. There was no evidence of pneumonia.

In no case was *Strep pneumoniae* isolated from the genital tract, and only in case 2 was there evidence of metritis. Despite this, it is difficult to discount the presence of the IUCD. Only 6% of British women aged 30–50 use an IUCD.[1] If all women in this age group are equally at risk of pneumococcal peritonitis the probability of all three cases in our series being in women using an IUCD is 0·000216. This indicates a highly significant association between IUCD usage and pneumococcal peritonitis.

We know of only 1 previous case-report of pneumococcal peritonitis in a woman using an IUCD (a Lippes loop fitted 2 years before the infection),[2] but of several cases of pneumococcal endometritis and peritonitis during pregnancy and the puerperium.[3,4] The pneumococcus is often found in the oropharynx[5] but not in the adult female genital tract.[6] An IUCD or placental tissue could provide a sanctuary for pneumococci borne in the blood from the oropharynx, or the lung, before invasion of the peritoneal cavity.

Pneumococcal peritonitis associated with an IUCD is clearly very rare. Failure to treat it promptly could, however, have tragic results. We suggest that any woman using an IUCD who presents with peritonitis without an obvious cause should be given antibiotics with activity against *Strep pneumoniae* (eg, a penicillin or cephalosporin). This advice might apply particularly for women over 30 whose IUCD had been fitted months or years earlier.

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LUNG CANCER AND PASSIVE SMOKING: CONCLUSION OF GREEK STUDY

SIR,—The notion that passive smoking may increase the risk of lung cancer has been supported by the results of two epidemiological studies specifically designed to explore the issue,[7,8] while a third[9] revealed a positive but not significant and dose-unrelated association. Positive results have also been reported from Pennsylvania[10] and Germany,[11] but no association was found in a study in Hong Kong.[12] The association has been considered credible, on empirical and theoretical grounds,[13] but a *Lancet* editorial[13] has summed up the situation by saying that the message of these studies "is not that epidemiologists and others have proved an association ... but that getting proof may not be as difficult as it once seemed".

Most of the controversy was generated by the simultaneous publication of the Greek[7] and Japanese[8] studies. Both have been criticised, and Hirayama has responded for the study in Japan.[14-16] The Greek study was criticised (by ourselves[7] and others) because of the small number of subjects, because several tumours lacked histological confirmation, and because controls and cases were from different hospitals. The Greek study has now been concluded (in A. K.'s professorial thesis, University of Athens). Although doubt must remain about the histological evidence and hospital differences there are now twice as many cases and 50% more controls; the results remain substantially the same.

102 women with a final diagnosis of lung cancer other than adenocarcinoma or terminal bronchial carcinoma, admitted to the three largest chest cancer hospitals in Athens, were interviewed between September, 1976, and December, 1982, together with 251 controls in the Hospital for Orthopaedic Disorders, Athens, from the same area of Athens as the cases. Cases and controls were interviewed by the same physician. 77 cases and 225 controls were non-smokers, and their demographic and socioeconomic profiles were very similar. Husbands who had stopped smoking 5–20 years before the interview were classified as ex-smokers, those who had stopped smoking within 5 years of the interview were considered as current smokers, and those who had stopped smoking more than 20 years previously were classified as non-smokers. Being never married, a widow, or a divorcee was considered as equivalent to marriage to a non-smoker or an ex-smoker, depending on the years elapsed since the event.

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